

Amendment
Serial No. 10/716,417
Attorney Docket No. 032106

REMARKS

Claims 1-25 are pending in the present application and are rejected. Claims 1 and 2 are herein amended.

Applicants' Response to Claim Objections

The Office Action objects to claims 1 and 2 because they appear to be contradictory. The Office Action notes that claim 1 recites flow paths and areas formed "on" the substrate, while claim 2 recites flow paths and areas formed "in and on" the substrate.

In response, Applicants herein amend claims 1 and 2 to recite that the flow paths and areas are formed "in" the substrate. This is consistent with the disclosure of the specification and drawings.

Furthermore, Applicants note that claim 1 and claim 2, which is dependent on claim 1, recite similar limitations. For instance, both claims recite "a flexible cover airtightly attached to the surface of said substrate member." Also, both claims recite collection area 112, detection area 116 and flow path 118. Claim 2 additionally recites preprocessing area 115. In order to clarify the claims, Applicants herein amend claim 2 in order to make it an independent claim.

Applicants' Response to Claim Rejections under 35 U.S.C. §102

Claims 1, 12/(1) and 13/(1) were rejected under 35 U.S.C. 102(e) as being anticipated by Schnipelsky (U.S. Patent No. 6,645,758).

It is the position of the Office Action that **Schnipelsky** discloses the invention as claimed. **Schnipelsky** discloses a containment cuvette formed from a thin sheet 12 and a thin sheet 14. As illustrated in Figure 1, the thin sheets 12 and 14 are formed so as to create multiple chambers: reaction chamber 25, first wash chamber 30, detection material chamber 32, second wash chamber 34, detection reagents chamber 36 and stop solution chamber 38. As illustrated in Figure 2, the bottom thin sheet 12 is planar, with the exception of the area in which reaction chamber 26 is formed. When a test solution is injected, reaction chamber 26 “pops” out to be flush with the surface of thin sheet 12. See column 12, lines 52-54 and column 13, lines 11-13. Thin sheet 14 is formed to have a raised surface in order to form the aforementioned chambers. The cuvette is used by passing a roller 60 over the various chambers in order to force the various solutions into detection chamber 40.

The Office Action argues that thin sheet 12 is analogous to substrate 110 of the recited invention and that thin sheet 14 is analogous to the cover 101. In the rejection under 35 U.S.C. §103 discussed below, the Office Action acknowledges that the various chambers of **Schnipelsky** are formed *on* the thin sheet 12, rather than *in* the thin sheet 12. As noted above, Applicants herein amend claims 1 and 2 in order to recite that the claimed areas are formed “in” the substrate, instead of “on” the substrate or “in and on” the substrate. Thus, Applicants

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respectfully submit that the amendments made in order to overcome the claim objections are sufficient to distinguish over **Schnipelsky**.

Applicants' Response to Claim Rejections under 35 U.S.C. §103

Claims 1-5, 7 and 10-13 were rejected under 35 U.S.C. 103(a) as being unpatentable over Schnipelsky or Applicant's admitted prior art (APA) in view of Hayes (U.S. Patent No. 6,334,980).

It is the position of the Office Action that either **Schnipelsky** or the **Applicant's prior art (APA)** disclose the invention as claimed, with the exception of teaching that the gaps, storage, preprocessing and detecting areas are formed *in* the substrate, rather than *on* the substrate. The Office Action relies on **Hayes** to provide this teaching.

The Office Action states that the **APA** "discloses that it is known in the art to prepare biochip cartridges comprising a tabular substrate member attached to a flexible cover in an airtight manner." It is noted that the device illustrated in Figure 5 is the only prior art which is disclosed to be "airtight." The device illustrated in Figure 5 does not disclose a flexible cover "attached to the surface of said substrate member." As illustrated in Figure 5, the substrate is not attached to a cover of any kind. More importantly, it is noted that the collection block 43, preprocessing block 44 and pockets 49 and 50 cannot be formed *in* the substrate 46. The substrate is of a very small size and it entirely contained within the combination block 45, which is downstream of the collection block 43, preprocessing block 44 and pockets 49 and 50. Applicants respectfully submit that it would not have been obvious to modify the prior art of

Figure 5 such that the gaps, storage, processing and detecting areas are formed in the substrate. Such a modification would require that the entire construction of the **APA** be drastically altered.

Applicants now address the combination of **Schnipelsky** and **Hayes**. It is the position of the Office Action that it would have been obvious to modify **Schnipelsky** by making the substrate thicker so that the gaps and chambers could be etched into the substrate. The Office Action states that such a modification would “decrease the complexity and increase the reproducibility of the construction,” and that it would be easier than creating a plurality of pouch-like chambers as in **Schnipelsky**.

In response, Applicants respectfully submit that there is no suggestion or motivation in the art to combine the teachings of **Schnipelsky** and **Hayes**. **Schnipelsky** discloses a cuvette which is formed from two thin sheets 12 and 14. The construction of the thin sheets 12 and 14 is illustrated in Figure 5 and disclosed at column 10, line 45 to column 11, line 3. **Schnipelsky** teaches that thin sheet 12, which the Office Action states is analogous to a substrate, is made of a “collapsible, relatively flexible plastic, ScotchpakTM brand heat-sealable film no. 229 made by 3M.” Column 10, lines 49-51. The thin sheets 12 and 14 are heat-sealed together in order to prevent leakage. Column 13, lines 1-8. This heat-sealable film is not capable of being etched, even if it is of a greater thickness.

Meanwhile, the substrate 20 of **Hayes** is formed from “alternating layers of materials such as copper and polyimide which are assembled into a unitary body using flexible electronic circuit manufacturing technology.” Column 4, lines 11-14. **Hayes** discloses the complex method of making the substrate 20 at column 7, line 23 to column 9, line 12 and in Figure 4.

In response, Applicants respectfully submit that there is no suggestion or motivation in the art to modify the cuvette of **Schnipelsky** by making a thicker substrate with etched chambers and gaps. Since **Schnipelsky** discloses the use of a heat sealable film which is not capable of etching, such a modification would require substituting a different material. If another material was used in place of the thin sheet 12, it is unclear whether the cuvette would function as designed, since it is unclear whether a substitute material would be heat-sealable to the thin sheet 14.

The thin sheet 12 of **Schnipelsky** is a simple film, while the substrate 20 of **Hayes** is a complex, multi-layered component. One having ordinary skill in the art would not have been motivated to substitute the complex substrate 20 of **Hayes** for the simple thin sheet 12 of **Schnipelsky**, particularly when that substrate 20 may not be able to properly seal to the thin sheet 14. Applicants respectfully traverse the rejection.

Claims 6, 8 and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Schnipelsky or applicants admitted prior art in view of Hayes as applied to claims 1 and 2, and further in view of Cohen (U.S. Patent Application No. 2002/0076354).

It is the position of the Office Action that the combination of **Schnipelsky** or **APA** in view of **Hayes** discloses the invention as claimed, with the exception of teaching that a cover is attached to both the top and bottom surfaces of the substrate member. The Office Action relies on **Cohen** to provide this teaching.

First, Applicants respectfully submit that claims 6, 8 and 9 are patentable due to their direct or indirect dependency on claims 1 or 2, which Applicants submit are patentable for at least the reasons discussed above. **Cohen** discloses an optical disc 150 formed of three layers: substrate 156, channel layer 154 and cap 152. Despite this disclosure, the Office Action states that channel layer 154 is a “substrate” and that substrate 156 and cap 152 are “covers.” Applicants respectfully submit that the Office Action’s interpretation contradicts the explicit teachings of **Cohen**. Furthermore, Applicants note that Figures 2A and 2C discloses vent ports 160. Thus, the cap 152 is not airtightly attached. Applicants respectfully traverse the rejection.

Claims 14-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over applicant’s admitted prior art in view of Hayes as applied to claims 1 and 2, and further in view of Furcht (U.S. Patent No. 6,303,288).

It is the position of the Office Action that the combination of **Schnipelsky** or **APA** in view of **Hayes** discloses the invention as claimed, with the exception of teaching that the biochip cartridge is made separable into a first housing and a second housing that are detachably joined. The Office Action relies on **Furcht** to provide this teaching. In response to this rejection, Applicants respectfully submit that claims 14-18 are patentable due to their dependency on claims 1 or 2, which Applicants submit is patentable for the reasons discussed above. Applicants respectfully traverse the rejection.

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Claims 19-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Hayes as applied to claims 1 and 2, and further in view of McGarry (U.S. Patent No. 6,642,046). Claims 19-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Schnipelsky in view of Hayes as applied to claim 1 and 2, and further in view of McGarry.

It is the position of the Office Action that the combination of **Schnipelsky** or **APA** and **Hayes** discloses the invention as claimed, with the exception of teaching that a carrier is a glass slide no greater than 25 mm wide and 75 mm long. The Office Action relies on **McGarry** to provide this teaching. In response to this rejection, Applicants respectfully submit that claims 19-24 are patentable due to their dependency on claims 1 or 2, which Applicants submit are patentable for the reasons discussed above. Applicants respectfully traverse the rejection.


For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned agent.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
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